AMENDMENTS TO THE CLAIMS

1-22. (Canceled)

23. (Currently amended) A porous cross-linked metal oxide or silicon oxide based aerogel material produced by:

(a) first, forming a metal oxide or silicon oxide based sol-gel preformed material prior to reaction with an organic cross-linking agent,

(b) contacting the ~~preformed~~ metal oxide or silicon oxide based sol-gel preformed material with an organic cross-linking agent in an amount comprising at least about 2% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material, the cross-linking agent comprising an organic compound that provides an organic ~~conformal coating~~ surface layer chemically bound to surfaces of said metal oxide or silicon oxide based sol-gel preformed material and then,

(c) drying the ~~cross-linked~~ metal oxide or silicon oxide based sol-gel preformed material provided with ~~a conformal coating~~ the surface layer of chemically bound organic material to form the porous cross-linked metal oxide or silicon oxide based aerogel material.

24. (Canceled)

25. (Currently amended) A cross-linked metal oxide or silicon oxide based sol-gel material, comprising

a metal oxide or silicon oxide based sol-gel preformed material that has been formed prior to reaction with an organic cross-linking agent, said metal oxide or silicon oxide based sol-gel preformed material having ~~a conformal coating~~ surface layer of an organic substance formed by chemical bonding of an organic cross-linking agent in an amount comprising at least about 2% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material to surfaces of said metal oxide or silicon oxide based sol-gel preformed material after

formation of said metal oxide or silicon oxide based sol-gel preformed material so as to form said cross-linked metal oxide or silicon oxide based sol-gel material.

26. (Canceled)

27. (Currently amended) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 5% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material.

28. (Currently amended) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 10% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material.

29. (Currently amended) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 30% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material.

30. (Currently amended) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 50% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material.

31. (Currently amended) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent comprises at least about 80% by weight based on the total weight of the cross-linked metal oxide or silicon oxide based sol-gel material.

32-35. (Canceled)

36. (Previously Presented) The sol-gel material of claim 25, wherein the preformed metal oxide or silicon oxide based sol-gel material is silica based.

37. (Previously Presented) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent is a diisocyanate, a triisocyanate, a polyisocyanate, or a mixture thereof.

38. (Previously Presented) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linking agent is hexamethylene diisocyanate, poly(hexamethylene diisocyanate), toluene diisocyanate, diphenylmethane diisocyanate, an aliphatic polyisocyanate, triphenylmethyl triisocyanate, or a mixture thereof.

39. (Previously Presented) The cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, wherein the cross-linked metal oxide or silicon oxide based sol-gel material is more resistant to rupture under load than the preformed metal oxide or silicon oxide based sol-gel material prior to cross-linking with the cross-linking agent.

40. (Currently amended) A cross-linked metal oxide or silicon oxide based aerogel material formed by drying of the cross-linked metal oxide or silicon oxide based sol-gel material of claim 25, the drying being carried out using at least one of solvent exchange, [[or]]supercritical drying, or a process that does not involve supercritical drying~~both, such that the aerogel material does not collapse when in contact with a liquid that comprises water, an alcohol, an ether, a hydrocarbon, an ester, a ketone, a carboxylic acid, a phosphoric acid, or a liquefied gas~~.

41. (Currently amended) The cross-linked metal oxide or silicon oxide based aerogel material of claim [[40]]73, wherein the liquefied gas is nitrogen, argon, helium, hydrogen, or oxygen.

42. (Currently amended) The cross-linked metal oxide or silicon oxide based aerogel material of claim [[40]]73, wherein the hydrocarbon is kerosene, gasoline, jet fuel, or rocket fuel.

43-46. (Canceled)

47. (Previously Presented) A thermal insulating material comprising the sol-gel material of claim 25.

48. (Original) A tile, door, panel, shingle, shutter, beam, cooler, article of clothing, shoe, or boot comprising the thermal insulating material according to claim 47.

49. (Previously Presented) A structural material comprising the material of claim 25.

50-68. (Canceled)

69. (Previously Presented) The metal oxide or silicon oxide based sol-gel material of claim 25 wherein a chemical functionality of the surfaces of said metal oxide or silicon oxide based sol-gel material acts as a template for reaction with, accumulation of, or both, the cross-linking agent.

70. (Previously Presented) The metal oxide or silicon oxide based sol-gel material of claim 25 wherein the surfaces of the metal oxide or silicon oxide based sol-gel material act as a template for the cross-linking agent.

71. (Previously Presented) The sol-gel material of claim 25 comprising an attached group wherein the cross-linking agent comprising an organic compound includes the attached group.

72. (Canceled)

73. (New) The aerogel material of claim 40 wherein the aerogel material does not collapse when in contact with a liquid that comprises water, an alcohol, an ether, a hydrocarbon, an ester, a ketone, a carboxylic acid, a phosphoric acid, or a liquefied gas.